

Pulling your self together: meditation promotes congruence between implicit and explicit self-esteem

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Postprint / Postprint

Zeitschriftenartikel / journal article

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Empfohlene Zitierung / Suggested Citation:

Koole, S. L., Govorun, O., Cheng, C. M., & Gallucci, M. (2009). Pulling your self together: meditation promotes congruence between implicit and explicit self-esteem. *Journal of Experimental Social Psychology*, 45(6), 1220-1226.
<https://doi.org/10.1016/j.jesp.2009.05.018>

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Accepted Manuscript

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PII: S0022-1031(09)00131-0
DOI: [10.1016/j.jesp.2009.05.018](https://doi.org/10.1016/j.jesp.2009.05.018)
Reference: YJESP 2288

To appear in: *Journal of Experimental Social Psychology*

Received Date: 18 January 2008
Revised Date: 28 May 2009

Please cite this article as: Koole, S.L., Govorun, O., Cheng, C.M., Gallucci, M., Pulling Your Self Together: Meditation Promotes Congruence between Implicit and Explicit Self-Esteem, *Journal of Experimental Social Psychology* (2009), doi: [10.1016/j.jesp.2009.05.018](https://doi.org/10.1016/j.jesp.2009.05.018)

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Running Head: Meditation and Self-Esteem

Pulling Your Self Together:
Meditation Promotes Congruence between Implicit and Explicit Self-Esteem

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Draft: May 28, 2009

Main text: 4,945 words

KEY WORDS: (implicit) self-esteem, name letter preference, meditation, mindfulness

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Abstract

Self-reported or explicit self-esteem frequently conflicts with indirectly assessed, implicit self-esteem. The present research investigated whether meditation may reduce such inner conflicts by promoting congruence between implicit and explicit self-esteem. Relative to control conditions, meditation led to greater congruence between explicit self-esteem, assessed via self-report, and implicit self-esteem, indicated by name letter preference (Studies 1 and 2). Low implicit self-esteem was further associated with a slow-down of explicit self-evaluation (Study 2), an effect that mediated the greater congruence between implicit and explicit self-esteem in the meditation condition. These results suggest that meditation encourages people to rely more on intuitive feelings of self-worth.

Pulling Your Self Together:

Meditation Promotes Congruence between Implicit and Explicit Self-Esteem

One of psychology's enduring missions is to liberate people from their inner conflicts. Many troubling psychological conflicts occur between explicit, well-articulated beliefs, norms, or goals (Emmons & King, 1988; Higgins, 1987). Nevertheless, these may represent only the tip of the iceberg. As recent research has shown, psychological conflicts also proliferate on more intuitive or implicit levels that defy attempts at logical reasoning or explanation (Baumann, Kaschel, & Kuhl, 2005; Pyszczynski, Greenberg, & Solomon, 2000; Spencer, Jordan, Logel, & Zanna, 2005).

Implicit conflict appears to be particularly common with regard to self-esteem - people's evaluations of their own person as intrinsically positive or negative. Self-esteem is traditionally assessed through self-report items such as "I take a positive attitude toward myself" (Rosenberg, 1965). Recently, however, advances in social cognition research have led to the development of implicit measures of self-esteem (Greenwald & Banaji, 1995). For instance, implicit self-esteem may be indicated by people's evaluations of self-associated stimuli such as their own name letters (Koole, Dijksterhuis, & van Knippenberg, 2001) or the degree to which the self primes positive evaluations (Hetts, Sakuma, & Pelham, 1999; Koole, 2004). Although the distinction between implicit versus explicit self-esteem continues to be debated, most theorists now consider them to be separate (but related) constructs. Explicit self-esteem is presumably based in beliefs about the self that a person consciously considers to be valid. By contrast, implicit self-esteem is assumed to derive from intuitive associations that the person has towards the self, regardless of whether he or she considers these associations to be valid (Koole & DeHart, 2007; Pelham, Carvallo, & Jones, 2005; see also Gawronski & Bodenhausen, 2006).

Measures of implicit and explicit self-esteem are usually weakly correlated (Bosson, Swann, & Pennebaker, 2000; Koole et al., 2001; Krizan & Suls, 2008). Whereas implicit and

explicit self-esteem go hand in hand for some individuals, many individuals display large discrepancies between the two types of self-esteem. Importantly, such discrepancies have been associated with distinct psychological disadvantages. For instance, individuals with high explicit self-esteem and low implicit self-esteem are often more narcissistic and vulnerable to criticism than individuals with other configurations of implicit and explicit self-esteem (Bosson, Brown, Zeigler-Hill, & Swann, 2003; Jordan, Spencer, Zanna, Hoshino-Browne, & Correll, 2003; Shröder-Abé, Rudolph, Wiesner, & Schütz, 2007; Zeigler-Hill, 2006). Likewise, individuals with low explicit self-esteem and high implicit self-esteem appear to be especially prone to maladaptive forms of perfectionism (Zeigler-Hill & Terry, 2007). Finally, discrepancies between implicit and explicit self-esteem predict greater levels of self-doubt (Briñol, Petty, & Wheeler, 2006), anger suppression (Shröder-Abé, Rudolph, & Schütz, 2007), and impaired physical and psychological health (Shröder-Abé et al., 2007). In view of such findings, theorists have suggested that discrepancies between implicit and explicit self-aspects may be a source of psychological stress (Baumann et al., 2005; Kehr, 2004; Shröder-Abé et al., 2007; see also Rydell, McConnell, & Mackie, 2008). It thus seems important to identify ways in which the congruence between implicit and explicit self-esteem can be enhanced.

Prior research has established that explicit self-esteem becomes more congruent with implicit self-esteem to the extent that people evaluate themselves more rapidly (Koole et al., 2001, Study 3) or under heightened cognitive load (Koole et al., 2001, Study 4). Dissociations between implicit and explicit self-esteem may thus arise especially when people engage in conscious self-reflection. This pattern fits with traditional theories of self-consciousness, which have assumed that conscious attention to the self is driven by conceptual processing (e.g., Silvia & Duval, 2001). These theories suggest that when people become conscious of the self, their more immediate experiences and intuitions about the self become filtered through a lens of pre-existing linguistic categories, cognitive schemas, and beliefs. The

concept-driven nature of self-consciousness may thus inhibit the more intuitive feelings towards the self that presumably underlie implicit self-esteem, thus resulting in discrepancies between implicit and explicit self-esteem.

Considerable evidence supports the link between self-consciousness and conceptual processing (for reviews, see Swann, Chang-Schneider, & McClarty, 2007; Suls, Martin, & Wheeler, 2002). Nevertheless, self-consciousness may not always be conceptually driven. A variety of philosophical, religious, and psychological traditions, including ancient Greek philosophy, Buddhism, existentialism and humanism, have proposed that human consciousness may also operate in a more holistic, integrative manner (Brown, Ryan, & Creswell, 2007). Resonating to these ideas, modern personality psychologists have developed notions such as “integrative awareness” (Brown et al., 2007), “organismic valuing process” (Sheldon, Arndt, & Houser-Marko, 2003), and “autonoetic access” (Kazén, Baumann, & Kuhl, 2003). Although these constructs differ in important ways, they converge on the existence of self-conscious states that allow people to get in touch with deep-seated feelings and intuitions.

A related construct is mindfulness, a mental state of attending to and being aware of the present moment without judgment (Brown et al., 2007; Kabat-Zinn, 1994; Langer, 1989). Unlike conceptually driven forms of awareness, which entail processing information through our existing cognitive schemas, mindfulness involves a mere noticing of one’s internal and external experiences in an objective manner, “as part of the ongoing stream of consciousness” (Brown et al., 2007, p. 212). Because mindful processing enhances the clarity of one’s thoughts, feelings, behaviors, and sensations (Brown et al., 2007), it may allow intuitive, implicitly represented information about the self (i.e., implicit self-esteem) to become incorporated into people’s conscious experience of themselves (i.e., explicit self-esteem). In addition, mindfulness promotes observing one’s experiences without making judgments or attempts to change those experiences. Thus, mindful individuals may also be more accepting

of their intuitive self-evaluations once they become aware of them.

If self-conscious states such as mindfulness indeed promote the integration of implicit and explicit self-representations, then these mental states can be expected to foster congruence between implicit and explicit self-esteem. Indirect support for this notion was obtained in studies showing that congruence between implicit and explicit self-esteem is greater among individuals who are chronically attuned to their intuition (Jordan et al., 2007; Pelham et al., 2005), and among individuals who are instructed to embrace their intuitions about the self (Jordan et al., 2007). Being open to intuition is presumably an important aspect of integrative awareness or mindfulness. More to the point, a recent study showed that dispositional mindfulness predicts greater congruence between implicit and explicit self-esteem (Brown & Ryan, 2003). Building on and extending these findings, the present research examines whether a practice that is aimed at promoting mindfulness –namely, meditation - may enhance the congruence between implicit and explicit self-esteem.

Meditation refers to a set of practices that engage a specific attentional set in order to regulate body and mind (Cahn & Polich, 2006). Meditation is rooted in several Eastern religious traditions such as Buddhism, Taoism, and Hinduism, and has increasingly become a popular secular practice aimed at improving psychological and physical well-being. It is also often used to cultivate mindfulness skills (Kabat-Zinn, 1994). Common meditative practices include observing one's thoughts or feelings in an objective manner and focusing on specific bodily sensations such as breathing. Though the precise psychological mechanisms underlying meditation remain to be explicated, there exists an extensive body of research on the psychological and neurobiological effects of meditation (Cahn & Polich, 2006). Moreover, meditative practices are increasingly used as a clinical intervention (Barbor, 2001).

There are various grounds to suspect that meditation might enhance the congruence of implicit and explicit self-esteem. First, as mentioned above, meditation may promote mindfulness, which is associated with greater congruence between implicit and explicit self-

related affect (Brown & Ryan, 2003). Second, many forms of meditation have been explicitly designed with the goal of promoting inner harmony, and empirical studies have confirmed that meditation can indeed foster beneficial psychological and physiological states (Davidson et al., 2003). To the extent that discrepancies between implicit and explicit self-esteem create inner turmoil (Briñol et al., 2006; Jordan et al., 2003; Zeigler-Hill & Terry, 2007), practices designed to harmonize mental life may enhance the correspondence between implicit and explicit self-esteem. Third, meditation has been found to increase EEG coherence, a neurological index of how well different brain areas are synchronized (e.g., Aftanas & Golocheikine, 2001). By fostering integration by higher order cognitive functions (Singer, 1999), neurological synchronization might help to resolve discrepancies between implicit and explicit aspects of the self.

As an initial test of the idea that meditation may increase the congruence between implicit and explicit self-esteem, we measured both types of self-esteem among a group of individuals ($N = 20$) with varying experience at meditation (i.e., from 1 month to 20 years). As expected, the association between implicit and explicit self-esteem became more positive with increased meditation experience, even when statistically controlling for age. Encouraged by these findings, we designed the present experiments to address the causal impact of meditation on the congruence between implicit and explicit self-esteem. In Study 1, a group of university students engaged in a meditation exercise before or after completing implicit and explicit measures of self-esteem. We predicted that participants would display greater congruence between implicit and explicit self-esteem if they had meditated before rather than after completing the self-esteem measures. Study 2 sought to replicate these effects using a different control condition and explored some underlying mechanisms whereby meditation may influence the self-evaluation process.

Study 1

Method

Participants and Design

One hundred and thirty introductory psychology students (76 women and 54 men; mean age = 19) at the Ohio State University were randomly assigned to the experimental conditions.

Procedure

Participants completed the study on individual computers in groups of 2 to 5. They were told that the study involved a meditation exercise and several unrelated tasks dealing with preferences and self-views. In the meditation-first condition, participants listened to the meditation audio and then completed implicit and explicit measures of self-esteem. In the meditation-last condition, participants first completed the two self-esteem measures and then listened to the meditation audio. Participants always completed the implicit self-esteem measure before the explicit self-esteem measure, because the reverse order can artificially raise the congruence between both measures (Bosson et al., 2000). At the end of the experiment, participants reported their initials, gender, and age. Participants were then probed for suspicion, debriefed, and dismissed. Overall, participants reported enjoying the meditation exercise and were not suspicious of the cover story or any of the measures.

Materials

Name-Letter Task. The name-letter task (Nuttin, 1985; Kitayama & Karasawa, 1997) was used as an implicit self-esteem measure. Participants were told that the task dealt with simple preferences and were asked to rate how much they liked each of the letters in the Roman alphabet on a scale from 1 (*dislike very much*) to 7 (*like very much*). In evaluating the letters, participants were instructed to rely on their intuitions. Implicit self-esteem scores were computed by (1) calculating an average preference for each letter based on the ratings of individuals who did not have these letters as their initials; (2) subtracting this baseline from participants' ratings of their initials; (3) averaging the adjusted ratings of the two initials for each participant. This procedure is commonly used for computing implicit self-esteem scores

on the name-letter task (Kitayama & Karasawa, 1997). Meditation did not impact baseline evaluations of alphabet letters in the present research. We therefore computed name-letter preferences on the basis of baseline letter evaluations that were aggregated for all participants within each study.

Name-letter preferences are a widely used and valid implicit measure of self-esteem (for a review, see Koole & Pelham, 2003). People generally lack awareness that they engage in self-evaluation when rating their name letters (Jones, Pelham, Mirenberg, & Hetts, 2002). Name-letter preference further shows adequate test-retest reliability, internal consistency, and predictive validity (Bosson et al., 2000; Koole et al., 2001). For example, similar to explicit self-esteem scores, higher name-letter scores are associated with the tendency to self-enhance (Bosson, Brown, Zeigler-Hill, & Swann, 2003). The measure also demonstrates theoretically predicted effects, such as an increase in name-letter liking following a consistent pairing of the self with positive stimuli (Baccus, Baldwin, & Packer, 2004; Dijksterhuis, 2004). So far, name-letter preference is the only form of implicit self-esteem that has been shown to influence major life decisions (Anseel & Duyck, 2008; Pelham, Mirenberg, & Jones, 2005).

Explicit self-esteem. We used the Rosenberg Self-Esteem Scale (RSES; Rosenberg, 1965) to measure explicit self-esteem. The RSES is one of the most well-validated and reliable explicit self-esteem measures (Blascovich & Tomaka, 1991; Demo, 1985). It consists of 10 items assessing people's global feelings of self-worth. Sample items include "I feel that I am a person of worth, at least on an equal basis with others" and "All in all, I am inclined to feel that I am a failure" (reverse scored). The response scale ranges from 1 (*strongly disagree*) to 7 (*strongly agree*). The RSES had good reliability (Cronbach's α s in Studies 1 and 2 > .80) and so its items were summed.

Meditation Exercise. During the meditation audio, participants listened to an 11-minute guided body scan exercise developed and recorded by Overman (1999). Participants were instructed to sit in a relaxed and wakeful posture with their eyes closed and to focus on

their breathing. Participants were then directed to observe sensations in each area of their body in a careful and nonjudgmental fashion. The exercise was narrated by a male voice and was accompanied by relaxing music. Body scan exercises are frequently used to introduce beginners to the practice of meditation. Due to clear and frequent instructions, body scans are easier to follow than some of the more advanced meditative practices (e.g., prolonged focusing of attention without guidance; see Cahn & Polich, 2006).

Results and Discussion

Gender did not qualify any effects of meditation in Studies 1 and 2 and is not discussed further. Likewise, meditation did not affect mean levels of implicit or explicit self-esteem in Studies 1 and 2. Our discussion therefore focuses on the relation between implicit and explicit self-esteem.

To examine whether meditation increased the relation between implicit and explicit self-esteem, explicit self-esteem scores were regressed on name-letter preferences, experimental condition (coded as -1 for meditation last and 1 for meditation first), and their interaction term. In Studies 1 and 2, continuous predictor variables were z-transformed as recommended by Aiken and West (1991). The analysis revealed only a significant condition by name-letter preferences interaction, $\beta = .34$, $t(1, 126) = 1.94$, $p = .05$. The pattern of this interaction is depicted in Figure 1. Further analyses showed that name-letter preferences were significantly related to explicit self-esteem in the meditation-first condition, $r(65) = .27$, $p < .04$, but not in the meditation-last condition, $r(65) = -.07$, ns . Thus, as expected, meditation increased the congruence between implicit and explicit self-esteem. As far as we know, Study 1 provides the first demonstration that meditation can have a causal impact on the resolution of discrepancies between implicit and explicit self-views.

Study 2

In Study 2, we sought to replicate and extend Study 1's findings. As before, we manipulated whether or not participants meditated and predicted that meditation would

increase the congruence between implicit and explicit self-esteem. This time, however, we took additional steps to deepen our understanding of the underlying processes whereby meditation influences the relation between implicit and explicit self-esteem.

First, we assessed participants' explicit self-evaluation latencies as an indirect indicator of the process whereby people may access their implicit self-evaluations. Negative emotions tend to mobilize more cognitive resources than positive emotions (Taylor, 1991), which, among other things, is evidenced by longer response latencies to negative stimuli (Pratto & John, 1991). Because bringing negative implicit self-evaluations into awareness is likely to arouse painful feelings (Jordan et al., 2007), individuals who access their low implicit self-esteem during explicit self-evaluation can be expected to display a slow-down in response latencies. This slow-down might be moderated by meditation. Specifically, meditation may facilitate the process of accessing implicit self-evaluations during explicit self-evaluation (see Kazén et al., 2003's notion of auto-noetic access). If this is the case, then meditation would be expected to amplify the slow-down in explicit self-evaluations among individuals with low implicit self-esteem. We refer to the latter as the *enhanced access* model, which is displayed in Figure 2a.

Alternatively, it could be that meditation facilitates people's reliance on their feelings of implicit self-esteem in judgments of explicit self-esteem (see also Jordan et al. 2007). This line of reasoning assumes that both meditating and non-meditating individuals have access to their implicit self-esteem, and are thus equally likely to display a slow-down in explicit self-evaluation when their implicit self-esteem is negative. However, only meditating individuals may be inclined to use accessible feelings of implicit self-esteem in determining their explicit self-esteem. We refer to the latter as the *enhanced use* model, which is displayed in Figure 2b. Both the enhanced access and enhanced use models involve a combination of moderation and mediation effects. We therefore tested these models using moderated mediation analysis (MacKinnon, Fairchild, & Fritz, 2007; Preacher, Rucker, & Hayes, 2007).

Second, we modified the control condition to make sure that the effects of meditation were not due to differences in task duration, information availability, or cognitive load. All participants in Study 2 listened to the meditation audio. However, control participants were additionally asked to count the number of verbs in the spoken narrative on the tape. We reasoned that counting verbs would be distracting and thus prevent control participants from engaging in meditation. Therefore, participants in the meditation and control conditions were engaged in a task for the same duration and were exposed to the same information prior to completing the dependent measures. Furthermore, because counting verbs is cognitively demanding, this improved control condition ruled out the possibility that the effects of meditation were due to cognitive load.

Finally, because prior studies have found that meditation can foster affect regulation (Brown et al., 2007; Cahn & Polich, 2006), we also assessed participants' moods in Study 2. We had no strong theoretical expectations regarding the role of mood in our findings. Nevertheless, our hunch was that the effects of meditation on the congruence between implicit and explicit self-esteem were driven by changes in self-consciousness rather than mood.

Method

Participants

Fifty-eight paid volunteers (38 women and 20 men; mean age = 21) at the VU University Amsterdam were randomly assigned to the experimental conditions.

Design and Procedure

Design, procedure, and materials were identical to Study 1, with a few exceptions. First, all materials were translated into Dutch, the RSES was scored on 9-point scales, and the audiotape was spoken by a female voice. Second, participants in the control condition were asked to count the number of verbs in the spoken narrative of the meditation tape. Third, during the name-letter preference task, participants rated the beauty of alphabet letters using a 5-point scale (1= not at all beautiful, 5 = very beautiful). Fourth, before and after the

meditation manipulation, we administered a Dutch translation of the abbreviated Profile of Mood Scales (POMS; Shacham, 1985), which measures *depression* (8 items), *anger* (7 items), *fatigue* (6 items), *vigor* (5 items), and *tension* (6 items). Reliabilities of the POMS subscales were satisfactory at each measurement, Cronbach's α s $> .70$. Finally, the computer unobtrusively assessed the latencies of participants' evaluations during the assessment of explicit self-esteem.

Results and Discussion

Mood. A series of 2 (time: before or after meditation manipulation; within participants) \times 2 (condition: meditation or counting verbs; between participants) ANOVAs on the POMS yielded no effects of meditation, all F s < 1 . Notably, prior investigations that found effects of meditation on mood generally provided participants with more practice at meditation (see Cahn & Polich, 2006). It could be that the lack of meditation experience of the present sample, which consisted of relatively inexperienced meditators, accounted for the absence of mood effects.

Congruence of Implicit and Explicit Self-Esteem. To examine whether meditation increased congruence between implicit and explicit self-esteem, explicit self-esteem scores were regressed on name-letter preferences, meditation, and their interaction term. Experimental condition was coded as -1 (counting verbs) and 1 (meditation). The analysis revealed a marginal effect of name-letter preferences, $\beta = .24$, $t(1,54) = 1.84$, $p = .071$, and a significant main effect of meditation, $\beta = -.29$, $t(1,54) = -2.15$, $p < .04$. However, these effects were fully qualified by the predicted meditation by name-letter preferences interaction, $\beta = .35$, $t(1,54) = 2.35$, $p < .03$. The specific pattern of this interaction is depicted in Figure 3. Follow-up analyses showed that name-letter preferences were significantly related to explicit self-esteem in the meditation condition, $r(24) = .49$, $p < .02$, but not in the control condition, $r(34) = -.07$, *ns*. Thus, in line with our findings in Studies 1 and 2, meditation increased the congruence between implicit and explicit self-esteem.

Self-Evaluation Latencies. Following established conventions in the analysis of response latency data, we first eliminated outliers from the dataset by converting values of 4,500 ms and higher to 4,500 ms. Next, we computed average latencies of participants explicit self-evaluations in the RSES (Cronbach's $\alpha = .88$). In a regression analysis, we estimated the effects of implicit self-esteem, meditation, and their interaction on self-evaluation latencies. The results revealed only a main effect of implicit self-esteem, such that explicit self-evaluations were slower as implicit self-esteem became more negative, $\beta = -.320$, $t(54) = 2.39$, $p < .03$. The interaction between implicit self-esteem and meditation was non-significant, $t < 1$. The lack of this interaction effect disconfirms the enhanced access model. Instead, it appears that participants in both meditation and control conditions accessed their implicit self-esteem. Presumably accessing low feelings of self-worth induced a mobilization of attentional resources (Taylor, 1991), and a resulting slow-down in explicit self-evaluation.

Moderated Mediation Analysis. We proceeded to test a conditional mediation model (MacKinnon, Fairchild, Fritz, 2007; Muller, Judd, Yzerbyt, 2005; Preacher, Rucker, & Hayes, 2007), to evaluate the role of self-evaluation latencies as a possible mediator of the observed congruence between implicit and explicit self-esteem. Specifically, we regressed explicit self-esteem on name-letter preferences, meditation condition, response time, and their interactions. The three-way interaction was non-significant and hence was dropped from the model (cf. Aiken & West, 1991). Results indicated a significant main effect of self-evaluation latencies, $\beta = -.315$, $t(51) = -2.20$, $p < .04$, and of meditation, $\beta = .303$, $t(51) = 2.16$, $p < .04$. Importantly, the interaction between meditation and self-evaluation latencies was significant, $\beta = .28$, $t(51) = 2.05$, $p = .045$, whereas the interaction between implicit self-esteem and meditation was no longer significant, $t < 1$. Thus, the interaction between name-letter preferences and meditation on explicit self-esteem was mediated by the interaction between self-evaluation latencies and the meditation condition. The obtained conditional mediation model is summarized in Figure 4.

One implication of the conditional mediation results is that the mediating effect of response time should vary by experimental condition. To explore this implication, we computed the conditional indirect effects of name-letter preferences on explicit self-esteem through self-evaluation latencies (i.e. a simple mediation model) for the two groups (cf. Preacher, Rucker, & Hayes, 2007). To obtain the simple mediation models, we multiplied the conditional simple slopes of name-letter preferences predicting response time and response time predicting explicit self-esteem, conditioned to the two experimental groups. When estimated for the control group, the indirect effect of name-letter preferences on explicit self-esteem was not significant, $IE = -.0019, z = -.032, p = .974$, whereas when estimated for the meditation group, the indirect effect was significant, $IE = .210, z = 1.97, p = .048$. Thus, the mediational effect of self-evaluation latencies was present in the meditation condition but not in the control condition. This pattern of mediation effects is in line with the enhanced use model, which states that meditation enhances people's inclination to rely on their implicit self-esteem in constructing their explicit judgments of self-esteem.

General Discussion

People's explicit self-evaluations frequently conflict with their implicit self-evaluations (Bosson et al., 2000; Koole et al., 2001). In the present research, we examined whether meditation might help to resolve such implicit conflicts within the self. Among American and Dutch university students, experimentally induced meditation increased the association between implicit and explicit self-esteem (Studies 1 and 2). Meditation had no consistent effects on average levels of implicit self-esteem (Studies 1-2), explicit self-esteem (Studies 1-2), or mood (Study 2). Taken together, these findings suggest that the notion that meditation promotes inner harmony has more than just a metaphorical meaning. In a real, objectively verifiable sense, meditation may allow people to bring their explicitly endorsed self-views in line with their more intuitively based implicit associations about the self.

Past research has shown that explicit self-esteem may become more congruent with implicit self-esteem when people evaluate themselves hastily or under cognitive load (Koole et al., 2001). Could the influence of meditation on implicit and explicit self-esteem be due to either of these variables? Various considerations suggest otherwise. First, in Study 2, a control condition that was cognitively demanding (i.e., counting verbs) did not promote congruence between implicit and explicit self-esteem. Second, the meditation instructions encouraged participants to relax and to observe their inner sensations in a careful and non-judgmental fashion. Third, examining participants' explicit self-evaluation latencies in Study 2 yielded no evidence that meditation leads to a global speed-up of explicit self-evaluation. It thus seems unlikely that meditation increases implicit-explicit self-esteem congruence by preventing individuals altogether from engaging in self-reflective thought.

The assessment of participants' latencies of explicitly evaluating their self-esteem in Study 2 shed additional light on the process whereby meditation may enhance the congruence between implicit and explicit self-esteem. Specifically, the results showed that low implicit self-esteem was associated with slower explicit self-evaluation latencies. We suggest that this slow-down in explicit self-evaluation is due to a mobilization of attentional resources (Taylor, 1991) that ensues when individuals are cognitively accessing negative feelings about themselves (i.e., feelings of low implicit self-esteem). Notably, the slow-down in self-evaluation latencies among individuals with low implicit self-esteem was not qualified by meditation. Thus, if our interpretation of participants' self-evaluation latencies is correct, it follows that meditation did little to improve participants' cognitive access to their feelings of implicit self-esteem. Instead, meditation increased the extent to which participants used accessible feelings of implicit self-esteem in gauging their explicit sense of self-esteem. This enhanced use model was supported in a moderated meditation analysis (see Figure 4).

It appears then, that engaging in meditation leads people to rely more on accessible feelings of implicit self-esteem in figuring out how much they explicitly esteem the self. In

this respect, the effects of meditation seem to parallel the effects of explicit instructions to rely on one's intuition (Jordan et al., 2007). Nevertheless, enhanced access to implicit self-esteem may still play a role in other forms of meditation than the one that was investigated in the present research. Specifically, the present form of meditation did not change participants' moods in Study 2, whereas other forms of meditation have been found to improve people's moods (Brown et al., 2001; Cahn & Polich, 2006). According to some theorists, negative mood can impair cognitive access to intuitive cognitive representations (Baumann et al., 2005). It is thus conceivable that meditation facilitates people's cognitive access to implicit self-esteem only to the extent that meditation serves to improve people's moods.

The present research is preliminary and hence subject to limitations. First, we relied exclusively on name-letter preferences to measure implicit self-esteem. Although the name letter measure has been extensively validated (Koole & Pelham, 2003), it remains important to establish whether the effects of meditation can be replicated with alternative measures of implicit self-esteem, such as the implicit association test (Greenwald & Farnham, 2000) or the evaluative priming task (Hetts et al., 1999; Koole, 2004). Second, more could be done to link the present findings to the neurological effects of meditation. As noted earlier, there is suggestive evidence that meditation may synchronize activity in various areas of the brain (Aftanas & Golocheikine, 2001). Neurological synchronization is believed to play a crucial role in the integration of distributed neural processes into higher order cognitive and affective functions (Singer, 1999). Thus, future work may examine whether the congruence-enhancing effects of meditation may be explained by neurological synchronization.

More generally, the present research bridges the independent traditions of implicit social cognition and meditation research. To our knowledge, the present research is the first to explicitly connect these two areas. Adding to the study of implicit social cognition, the present research was found that some forms of self-reflective thought may enhance, rather than reduce, the congruence between implicit and explicit measures. Adding to the meditation

literature, the present research demonstrates that some of the effects of meditation only become apparent if one simultaneously considers implicit and explicit measures of the self. To broaden the scope of the present work, future research may examine the effects of meditation across a greater variety of meditative practices, such as Zen or transcendental meditation (see Cahn & Polich, 2006), and different psychological constructs, such as implicit and explicit motives, attitudes, and affective states (see Baumann et al., 2005; Gawronski & Bodenhausen, 2006; Quirin, Kazén, Rohrmann, & Kuhl, 2009).

By promoting congruence in implicit and explicit self-esteem, meditation may serve important self-regulatory functions. Conflicts between implicit and explicit self-esteem are associated with a number of important psychological problems, such as narcissism (Jordan et al., 2003), self-doubt (Briñol et al., 2006), and maladaptive perfectionism (Zeigler-Hill & Terry, 2007). Future work may investigate whether meditation can alleviate the problems that are associated with discrepancies between implicit and explicit self-esteem. On the basis of the present research, meditation appears to be an effective way of resolving potentially disturbing conflicts within the self.

References

- Aftanas, L.I., & Golocheikine, S. A. (2001). Human anterior and frontal midline theta and lower alpha reflect emotionally positive state and internalized attention: High-resolution EEG investigation of meditation. *Neuroscience Letters*, 310, 57-6.
- Aiken, L. S., & West, S. G. (1991). *Multiple Regression: Testing and interpreting interactions*. Thousand Oaks: Sage.
- Anseel, F., & Duyck, W. (2008). Unconscious applications: A systematic test of the name-letter effect. *Psychological Science*, 19, 1059-1061.
- Aiken, L. S., & West, S. G. (1991). *Multiple Regression: Testing and Interpreting Interactions*. Newbury Park, CA.: Sage.
- Baccus, J. R., Baldwin, M. W., & Packer, D. J. (2004). Increasing implicit self-esteem through classical conditioning. *Psychological Science*, 15, 498-502.
- Barbor, C. (2001). The science of meditation. *Psychology Today*, May/June.
- Baumann, N., Kaschel, R., & Kuhl, J. (2005). Striving for unwanted goals: Stress-dependent discrepancies between explicit and implicit achievement motives reduce subjective well-being and increase psychosomatic symptoms. *Journal of Personality and Social Psychology*, 89, 781-799.
- Blascovich, J., & Tomaka, J. (1991). Measures of self-esteem. In J. P. Robinson, P. R. Shaver, & L. S. Wrightsman (Eds.), *Measures of personality and social psychological attitudes*. (Vol. 1, pp. 115–160). New York: Academic.
- Bosson, J. K., Brown, R. P., Zeigler-Hill, V., & Swann, W. B., Jr. (2003). Self-enhancement tendencies among people with high explicit self-esteem: The moderating role of implicit self-esteem. *Self and Identity*, 2, 169-187.
- Bosson, J., Swann, W.B., Jr., & Pennebaker, J. (2000). Stalking the perfect measure of implicit self-esteem: The blind men and the elephant revisited? *Journal of Personality and Social Psychology*, 79, 631-643.

- Briñol, P., Petty, R. E., & Wheeler, S. C. (2006). Discrepancies between explicit and implicit self-concepts: Consequences for information processing. *Journal of Personality and Social Psychology*, 91, 154-170.
- Brown, K.W. and Ryan, R.M. (2003). The benefits of being present: The role of mindfulness in psychological well-being. *Journal of Personality and Social Psychology*, 84, 822-848.
- Cahn, B. R., & Polich, J. (2006). Meditation states and traits: EEG, ERP, and neuroimaging studies. *Psychological Bulletin*, 132, 180-211.
- Carson, S. H., & Langer, E. J. (2006). Mindfulness and self-acceptance. *Journal of Rational-Emotive & Cognitive-Behavior Therapy*, 24, 29-43.
- Davidson, R. J., Kabat-Zinn, J., Schumacher, J., Rosenkranz, M., Muller, D., Santorelli, S. F., Urbanowski, F., Harrington, A., Bonus, K. & Sheridan, J. F. (2003). Alterations in brain and immune function produced by mindfulness meditation. *Psychosomatic Medicine* 65, 564-570
- Dijksterhuis, A. (2004). I like myself but I don't know why: Enhancing implicit self-esteem by subliminal evaluative conditioning. *Journal of Personality and Social Psychology*, 86, 345-355.
- Emmons, R. A., & King, L. A. (1988). Conflict among personal strivings: Immediate and long-term implications for psychological and physical well-being. *Journal of Personality and Social Psychology*, 54, 1040-1048.
- Fazio, R. H. (2001). On the automatic activation of associated evaluations: An overview. *Cognition and Emotion*, 15, 115-141.
- Gawronski, B., & Bodenhausen, G. V. (2006). Associative and propositional processes in evaluation: An integrative review of implicit and explicit attitude change. *Psychological Bulletin*, 132, 692-731.

- Greenwald, A. G., & Banaji, M. R. (1995). Implicit social cognition: Attitudes, self-esteem, and stereotypes. *Psychological Review*, 102, 4-27.
- Hetts, J. J., Sakuma, M., & Pelham, B. W. (1999). Two roads to positive regard: Implicit and explicit self-evaluation and culture. *Journal of Experimental Social Psychology*, 35, 512-559.
- Higgins, E. T. (1987). Self-discrepancy: A theory relating self and affect. *Psychological Review*, 94, 319-340.
- Hoffman, W., Gschwender, T., Nosek, B. A., & Schmitt, M. (2005). What moderates implicit-explicit consistency? *European Review of Social Psychology*, 16, 335-390.
- Jones, J. T., Pelham, B. W., Mirenberg, M. C., & Hetts, J. J. (2002). Name letter preferences are not merely mere exposure: Implicit egotism as self-regulation. *Journal of Experimental Social Psychology*, 38, 170-177.
- Jordan, C. H., Spencer, S. J., Zanna, M. P., Hoshino-Browne, E., & Correll, J. (2003). Secure and defensive high self-esteem. *Journal of Personality and Social Psychology*, 85, 969-978.
- Jordan, C. H., Whitfield, M., & Zeigler-Hill, V. (2007). Intuition and the correspondence between implicit and explicit self-esteem. *Journal of Personality and Social Psychology*, 93, 1067-1079.
- Kabat-Zinn, J. (1994). *Wherever you go, there you are: Mindfulness meditation in everyday life*. New York: Hyperion.
- Kazén, M., Baumann, N., & Kuhl, J. (2003). Self-infiltration vs. self-compatibility checking in dealing with unattractive tasks: The moderating influence of state vs. action orientation. *Motivation and Emotion*, 27, 157-197.
- Kitayama, S., & Karasawa, M. (1997). Implicit self-esteem in Japan: Name letters and birthday numbers. *Personality and Social Psychology Bulletin*, 23, 736-742.

- Koole, S. L. (2004). Volitional shielding of the self: Effects of action orientation and external demands on implicit self-evaluation. *Social Cognition*, 22, 117-146.
- Koole, S. L. & DeHart, T. (2007). Self-affection without self-reflection: Origins, models, and consequences of implicit self-esteem. In C. Sedikides & S. Spencer (Eds.), *The self in social psychology*. (pp. 36-86). New York: Psychology Press.
- Koole, S. L., Dijksterhuis, & van Knippenberg (2001). What's in a name: Implicit self-esteem and the automatic self. *Journal of Personality and Social Psychology*.
- Koole, S. L. & Pelham, B. W. (2003). On the nature of implicit self-esteem: The case of the name letter effect. In S. Spencer, S. Fein, & M. P. Zanna (Eds.), *Motivated social perception: The Ontario Symposium* (pp. 93-116). Hillsdale, NJ: Lawrence Erlbaum.
- Krizan, Z., & Suls, J. (2008). Are implicit and explicit measures of self-esteem related? A meta-analysis for the name-letter test. *Personality and Individual Differences*, 44, 521-531.
- Kuhl, J., & Kazén, M. (1994). Self-discrimination and memory: State orientation and false self-ascription of assigned activities. *Journal of Personality and Social Psychology*, 66, 1103-1115.
- Langer, E. J. (1989). *Mindfulness*. Cambridge, MA: Perseus Books.
- MacKinnon, D. P., Fairchild, A. J., Fritz, M. S. (2007). Mediation analysis. *Annual Review of Psychology*, 58, 593-614.
- Muller, D., Judd, C. M., Yzerbyt, V. Y. (2005). When moderation is mediated and mediation is moderated. *Journal of Personality and Social Psychology*, 89, 852-863.
- Nuttin, J. M. (Jr.) (1985). Narcissism beyond Gestalt and awareness: The name letter effect. *European Journal of Social Psychology*, 15, 353-361.
- Overman, P. (1999). *Ten Minutes to Relax*. [CD]. The Relaxation Company.
- Pelham, B. W., Carvallo, M., & Jones, J. T. (2005). Implicit egotism. *Current Directions in Psychological Science*, 14, 106-110.

Pelham, B. W., Koole, S. L., Hardin, C. D., Hetts, J. J., Seah, E., & De Hart, T. (2005).

Gender moderates the relation between implicit and explicit self-esteem. *Journal of Experimental Social Psychology*, 41, 84-89.

Pratto, F., & John, O. P. (1991). Automatic vigilance: The attention-grabbing power of negative social information. *Journal of Personality and Social Psychology*, 61, 380-391.

Preacher, K. J., Rucker, D. D., & Hayes, A. F. (2007). Assessing moderated mediation hypotheses: Theory, methods, and prescriptions. *Multivariate Behavioral Research*, 42, 185-227.

Pyszczynski, T., Greenberg, J., & Solomon, S. (2000). Proximal and distal defense: A new perspective on unconscious motivation. *Current Directions in Psychological Science*, 9, 156-160.

Quirin, M., Kazén, M., Rohrmann, S., & Kuhl, J. (2009). Implicit but not explicit affectivity predicts circadian and reactive cortisol: Using the implicit positive and negative affect test. *Journal of Personality*, 77, 401-425.

Rosenberg, M. (1965). *Society and the adolescent self-image*. Princeton, NJ: Princeton University Press.

Rydell, R. J., McConnell, A. R., & Mackie, D. M. (2008). Consequences of discrepant explicit and implicit attitudes: Cognitive dissonance and increased information processing. *Journal of Experimental Social Psychology*, 44, 1526-1532.

Schröder-Abé, M., Rudolph, A., & Schütz, A. (2007). High implicit self-esteem is not necessarily advantageous: Discrepancies between explicit and implicit self-esteem and their relationship with anger expression and psychological health. *European Journal of Personality*, 21, 319-339.

- Schröder-Abé, M., Rudolph, A., Wiesner, A., & Schütz, A. (2007). Self-esteem discrepancies and defensive reactions to social feedback. *International Journal of Psychology*, 42, 174-183.
- Sheldon, K.M., Arndt, J., & Houser-Marko, L. (2003). In search of the organismic valuing process: The human tendency to move towards beneficial goal choices. *Journal of Personality*, 71, 835-869.
- Silvia, P. J., & Duval, T. S. (2001). Objective self-awareness theory: Recent progress and enduring problems. *Personality and Social Psychology Review*, 5, 230-241.
- Singer, W. (1999). Neuronal synchrony: A versatile code for the definition of relations? *Neuron*, 24, 229-239.
- Spalding, L. R., & Hardin, C. D. (1999). Unconscious unease and self-handicapping: Behavioral consequences of individual differences in implicit and explicit self-esteem. *Psychological Science*, 10, 535-539.
- Spencer, S. J., Jordan, C. H., Logel, C. E., & Zanna, M. P. (2005) Nagging doubts and a glimmer of hope: The role of implicit self-esteem in self-image maintenance. In A. Tesser, A. J. Wood, & D. A. Stapel (2005). *On building, defending and regulating the self: A psychological perspective.* New York, NY: Psychology Press.
- Suls, J., Martin, R., & Wheeler, L. (2002). Social Comparison: Why, with whom and with what effect? *Current Directions in Psychological Science*, 11, 159-163.
- Swann, W. B. Jr., Chang-Schneider, C., McClarty, K. L. (2007). Do people's self-views matter? Self-concept and self-esteem in everyday life. *American Psychologist*, 62, 84-94.
- Taylor, S. E. (1991). Asymmetrical effects of positive and negative events: The mobilization-minimization hypothesis. *Psychological Bulletin*, 110, 67-85.
- Zeigler-Hill, V. (2006). Discrepancies between implicit and explicit self-esteem: Implications for narcissism and self-esteem instability. *Journal of Personality*, 74, 119-143.

Zeigler-Hill, V., & Terry, C. (2007). Perfectionism and explicit self-esteem: The moderating role of implicit self-esteem. *Self and Identity*, 6, 137-153.

Figure 1: Explicit Self-Esteem as a Function of Implicit Self-Esteem and Meditation, Study 1.

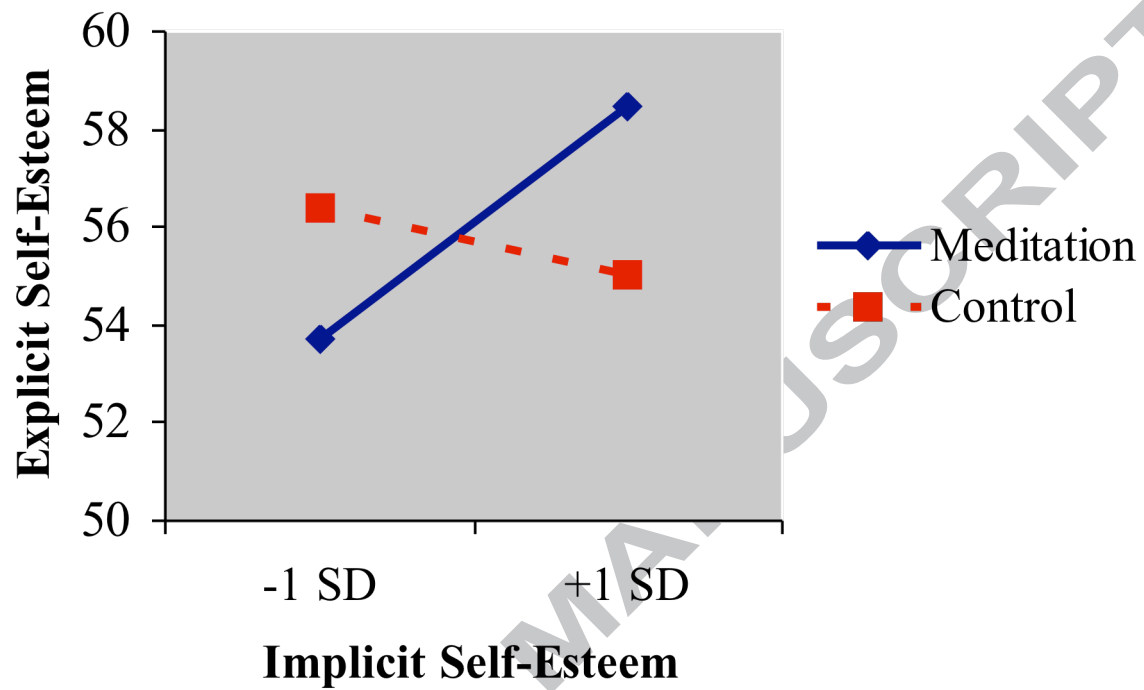


Figure 2a: Enhanced Access Model of Meditation.

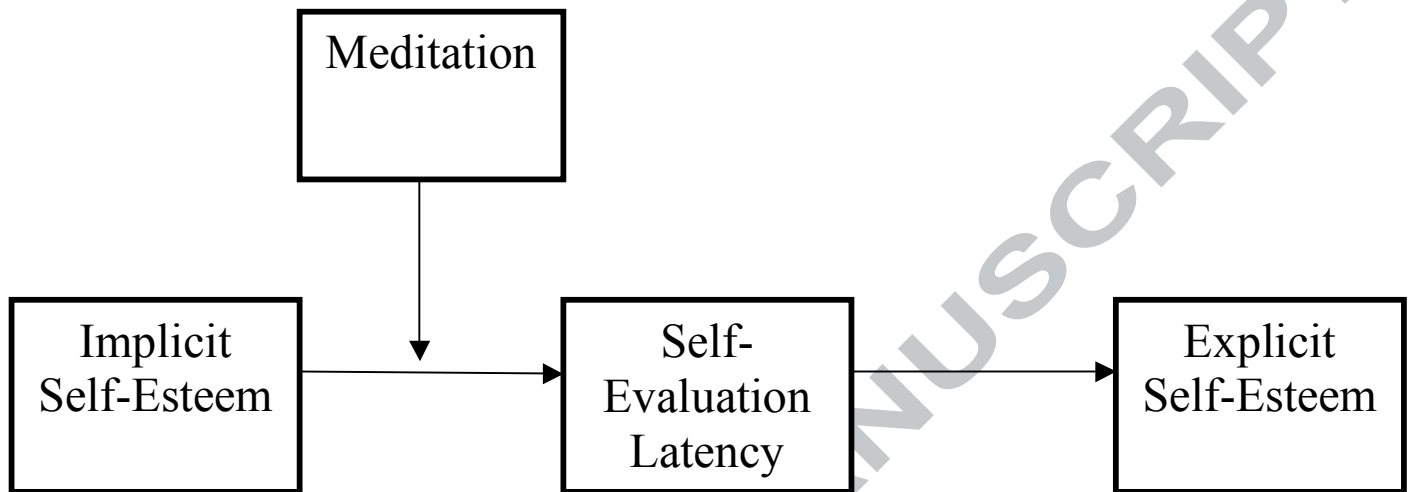


Figure 2b: Enhanced Use Model of Meditation.

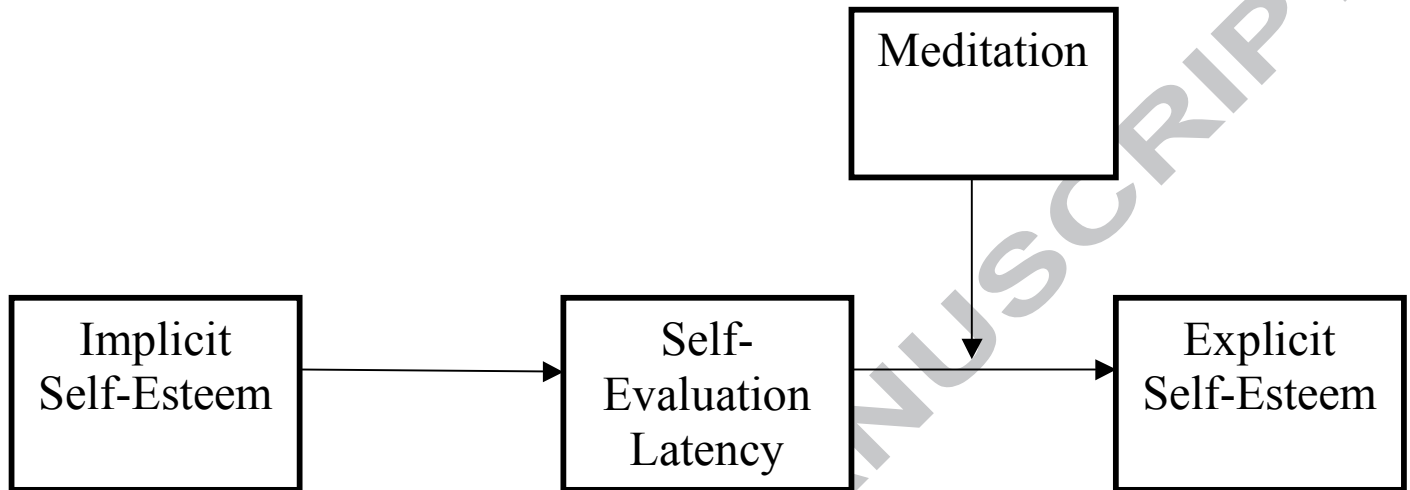


Figure 3: *Explicit Self-Esteem as a Function of Implicit Self-Esteem and Meditation, Study 2.*

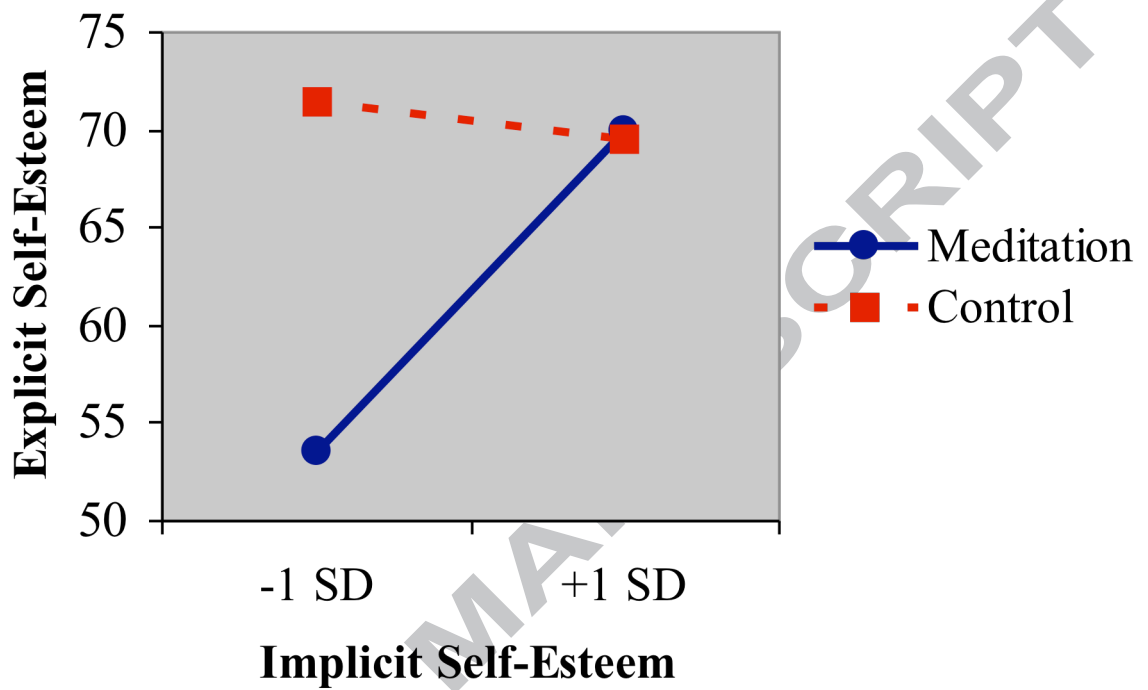
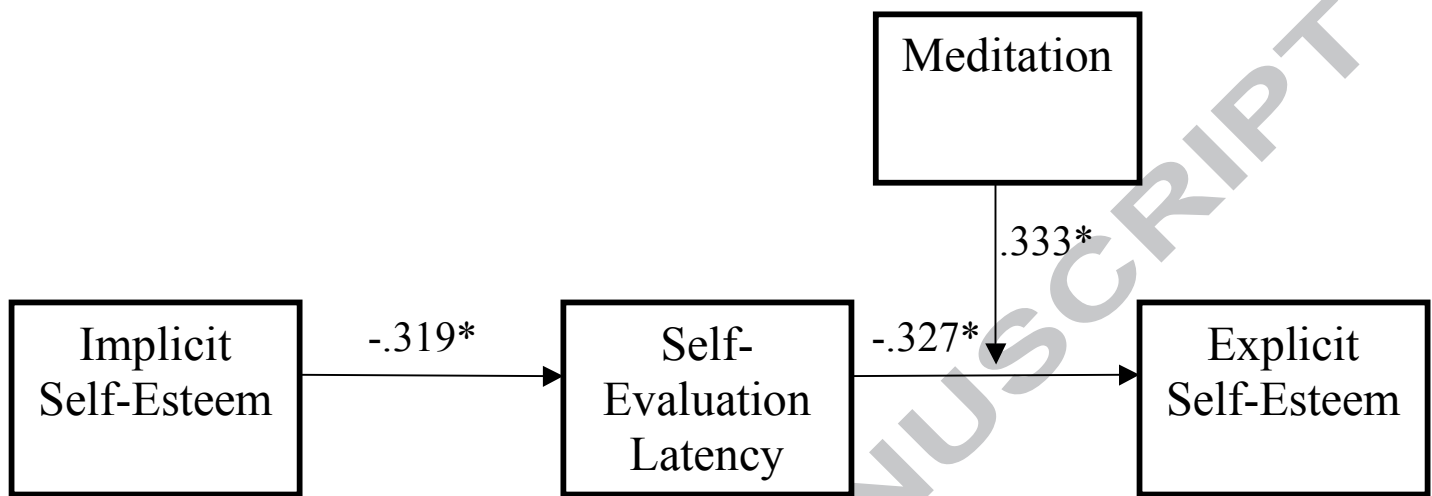


Figure 4: Path Analyses Indicating Moderated Mediation, Study 2.



Note: * $p < .05$; Omitted paths are not statistically significant.